

REMARKS/ARGUMENTS

I. Status of the claims

Claims 1 – 18 and 20 – 22 are currently pending.

Claim 1 was amended herein to recite a pipette tip column body. Support for the amendment can be found throughout Applicants' specification and in former claim 19.

Claim 21 was amended to delete a peristaltic pump, an electrokinetic pump, and an induction based fluidics pump.

Claims 11 and 19 were cancelled. Cancellation of subject matter is without prejudice to subsequent revival for prosecution in a divisional or continuation application.

The amendments are fully supported by the application as filed and do not introduce new matter. Entry of these amendments is respectfully requested.

II. Examiner interviews

Applicants thank Examiner Ramillano for the telephone interviews conducted on April 24, 2008 and May 9, 2008 with Applicant's representative, Christopher Holman. The following points were discussed during the phone interview:

- Claim amendments to recite a pipette tip column body.
- Claim amendments to the volume of the bed of extraction medium.
- In the April 24 telephone interview, the Tuvim reference (Patent 6,527,951 to Tuvim) was discussed. Tuvim discloses "The smallest thickness of all available filters is 0.75 microns."¹ Applicant's representative explained to the Examiner that filters having a thickness of 0.75 micron are in fact, not commercially available and that this sentence certainly contains a typographical error. It was agreed that Applicants would provide a declaration stating that filters having a thickness of 0.75 micron are not available.

III. Prior art rejections

Applicants note with appreciation the Examiner's withdrawal of the previous prior art rejections.

¹ Tuvim, column 1, lines 42 – 43.

June 17, 2008 Reply to non-final rejection dated March 21, 2008

IV. Claim rejections under 35 U.S.C. § 102

The Examiner rejected claim 1 as allegedly anticipated by Tuvim (US 6,527,951, “Tuvim”). Tuvim teaches a liquid chromatography column comprised of a screen disk coated with a fluorocarbon polymer on both sides. The fluorocarbon polymer coating serves as a gasket, sealing the column, and allowing the column to withstand pressures of up to approximately 10000 psi.²

Applicants respectfully traverse the rejection. In order to be deemed anticipatory, a reference must teach every element of the claim. Tuvim fails to do this. In this response, claim 1 was amended to recite a pipette tip column body. Tuvim does not teach a pipette tip column. Additionally, claim 1 recites a top frit and a bottom frit **bonded** to the extraction column body. Tuvim’s filter is **not bonded** to the column. Tuvim’s filter is secured with an end fitting, a ferrule and a compression screw³. The fluorocarbon coating on Tuvim’s filter acts as a gasket when it is secured with the compression screw. Furthermore, claim 1 recites an extraction column. Tuvim does not teach an extraction column. Tuvim teaches a liquid chromatography column.

In view of the foregoing, Applicants respectfully request withdrawal of all of the rejections under 35 U.S.C. § 102.

V. Claim rejections under 35 U.S.C. § 103

Colpan was cited in § 102 and § 103 rejections in the previous two Office actions dated August 30, 2007 and December 21, 2007. In the instant non-final rejection, the Examiner withdrew all rejections to Colpan, conceding that Colpan, either alone or with the previously asserted references, does not anticipate or render the claimed invention obvious.

The previous Office actions cited Brewer in view of Colpan, Hargro in view of Colpan, Hargro in view of Colpan and Smith, Hargro in view of Colpan and Hunt, and Hargro in view of Colpan and Hallman. The instant rejection cites Colpan in view of Tuvim, Brewer in view of Tuvim, Hargro in view of Tuvim, Hargro in view of Tuvim and Smith, Hargro in view of Tuvim and Hunt, and Hargro in view of Tuvim and Hallman. Since the Examiner removed all the previous rejections and substituted Tuvim for Colpan in the instant rejection, the remarks that follow are directed primarily to the addition of Tuvim.

A. Colpan in view of Tuvim

² Tuvim, abstract

³ Tuvim, column 2, lines 46 – 48, Fig. 2A.

June 17, 2008 Reply to non-final rejection dated March 21, 2008

In section 7 on page 3 of the Office action, the Examiner rejected claims 1 - 3, 9, 10, 14, 15, and 19 - 22 as allegedly obvious over Colpan (US 6,566,145) in view of Tuvim. Applicants believe the Examiner intended to cite US patent 6,274,371 ("Colpan") to Colpan rather than US patent 6,566,145 issued to Henco, Colpan and Petra Feuser. US patent 6,274,371 to Colpan contains the elements 23 and 20 as well as the text referred to by the Examiner in the instant rejection whereas patent 6,566,145 does not.

The Examiner states "It would have been obvious to a person of ordinary skill in the art to modify Colpan by having a top frit and bottom frit that are less than 350 microns thick because Tuvim discloses that it is widely known in the art that the smallest thickness of all available filters is 0.75 microns. Tuvim further discloses it would be advantageous to have a thinner filter because its volume would be smaller."

Applicants respectfully traverse the rejection. Applicants assert that the Examiner has not made a prima facie case of obviousness. In establishing a prima facie case of obviousness under 35 USC 103, it is incumbent upon the examiner to provide a **reason** why one of ordinary skill in the art would have been led to **modify** a prior art reference or to **combine** reference teachings to arrive at the claimed invention⁴. The Examiner has not provided a convincing line of reasoning. The Examiner simply asserts that Tuvim discloses "it would be advantageous to have a thinner filter because its volume would be smaller" however, the Examiner has not given a reason why it would have been obvious to a person having ordinary skill in the art to **combine** Colpan's filtration column with the teachings of Tuvim. The Examiner has not explained what beneficial result would be obtained by the combination of Tuvim's thin, low volume filters and Colpan's filtration column⁵.

Furthermore, there is no teaching, suggestion, or motivation in Tuvim that would have led one of ordinary skill to modify Colpan with the thin filters of Tuvim. Tuvim states thin filters are advantageous for LC but does not suggest or motivate use of a thin filter in filtration. Tuvim does not describe a means for attaching his thin filters to a filtration column. In fact, Tuvim provides no teaching with respect to filtration.

The MPEP states "To rely on a reference under 35 U.S.C. 103, it must be analogous prior art"⁶. Applicants assert that Tuvim and Colpan are non-analogous art. Tuvim's liquid chromatography (LC) column differs fundamentally from the Colpan's filtration column in structure, function and operation. It cannot be assumed that a component of Tuvim's chromatography column,

⁴ MPEP 2141, 2143.01 and 2144

⁵ MPEP 2144

⁶ MPEP 2141.01 (a)

June 17, 2008 Reply to non-final rejection dated March 21, 2008

such as a filter, would be appropriate for use as a frit in Colpan's filtration column. Tuvim teaches a filter designed to withstand pressures of up to 10,000 psi. Why would a filter designed to withstand pressures of up to 10,000 psi be suitable for use in Colpan's filtration column? Furthermore, Tuvim and Colpan are non-analogous art as evidenced by their classification. Tuvim's chromatography column is classified in classes 210 and 96 while Colpan is designated class 435.

In making an obviousness rejection, the Examiner must first ascertain the level of a person having ordinary skill in the art. The Examiner must determine what a person having ordinary skill in the art would have known at the time of the invention, and what that person would have reasonably expected to have been able to do in view of that knowledge⁷. What is the art? There is no reason a person having ordinary skill in the art of filtration column design would be familiar with LC hardware and column design. An artisan skilled in filtration column design would not be familiar with LC references such as Tuvim.

Even if it were desirable to combine Tuvim's filter with Colpan's filtration column, it cannot be assumed that one of ordinary skill in the art would be capable of substituting Tuvim's filter into a filtration column. Tuvim's filter is adapted to engage an end fitting, a screw and a solute conduit⁸. Colpan's filtration column does not have these components. Furthermore, as the filter thickness decreases, it becomes more difficult to position and attach each filter to the column. Attaching the bottom and top filter are two different procedures that have different structural and procedural requirements. The bottom filter would have to be attached first and then the column would be filled. After the column is filled, the top filter would have to be attached without flipping or warping. Applicants assert it would be extremely difficult for one of ordinary skill in the art to attach Tuvim's filters to Colpan's filtration column.

According to section 2141.02 of the MPEP, the Examiner must consider a prior art reference in its entirety including portions that would teach away. Applicants submit the Examiner has not considered the Tuvim reference in its entirety and that portions of the Tuvim reference that teach away. Tuvim teaches a stamped screen disk filter coated with fluorocarbon polymer on both sides. The fluorocarbon polymer serves as a gasket designed specifically for sealing the filter upon compression in the LC end-fitting assembly⁹. The Examiner has not provided any arguments addressing the advantages of combining Tuvim's **polymer-coated filter** with the teachings of Colpan. Colpan's filtration column has no end-fitting assembly for receiving Tuvim's polymer-coated filter.

⁷ MPEP 2141 II

⁸ Tuvim, Fig. 2A

⁹ Tuvim, column 2, lines 7-19

June 17, 2008 Reply to non-final rejection dated March 21, 2008

Additionally, because of the coating on Tuvim's filter, liquid can pass only through the open center portion of the filter¹⁰. What is the advantage to Colpan's filtration column to use a filter in which liquid can pass only through the center portion?

In the instant rejection, the Examiner conceded Colpan does not teach frits less than 350 microns thick. However, it is the Examiner's position that modification of Colpan's column with Tuvim's filters with would yield the claimed invention. Applicants respectfully disagree. First, amended claim 1 recites a **pipette tip** column body wherein the frits are **bonded** to the open channel. The combination of Tuvim and Colpan do not teach a pipette tip column having frits bonded to the column body.

On page 3 of the Office action, the Examiner characterized Colpan as disclosing an extraction column. This is not the case. Colpan does not teach an extraction column. Claim 1 of the instant invention recites a low dead volume **extraction** column, comprised of a bed of **extraction** media. The extraction media functions to capture a particular analyte such as a protein (e.g., with the use of an affinity binding group). Colpan teaches a filtering column for separating liquids from solids. Colpan's column is not comprised of extraction media. Colpan's solid phase does not capture a specific analyte. Colpan's stationary phase is comprised of materials for filtration such as diatomaceous earth that would not work for solid phase extraction. Colpan's solid phase functions as a filter that retains solids while allowing liquids to pass through.

Therefore, claim 1 is non-obvious over the combination of Tuvim and Colpan. Since claims 2, 3, 9, 10, 14, 15, and 19 – 22 depend from claim 1 and thus, further limit claim 1, they are non-obvious over the combination of Tuvim and Colpan.

Finally, although Tuvim states that filters having a thickness of 0.75 microns are available, this is not true. Douglas Gjerde, an inventor of the claimed invention has provided a declaration herewith stating that filters having a thickness of 0.75 microns are not available. The declaration establishes that the Tuvim patent is incorrect to the extent it describes 0.75 micron filters. A sheet of paper is approximately 100 microns thick. Therefore, a sheet of paper is 133 times thicker than the alleged 0.75-micron filter thickness stated by Tuvim. A filter more than 100 times thinner than a sheet of paper would not be able to withstand a pressure of 10,000 psi.

In view of the foregoing, Applicants respectfully request withdrawal of all of the rejections under 35 U.S.C. § 103.

¹⁰ Tuvim, abstract and Figure 1

B. Brewer in view of Tuvim

In section 8 or page 5 of the Office action, the Examiner rejected claim 1 as being unpatentable over Brewer (US 6,566,145, "Brewer") in view of Tuvim. The Examiner states "It would have been obvious to a person of ordinary skill in the art to modify Brewer's frits to have a frit less than 350 microns thick because Tuvim discloses that it is widely known in the art that the smallest thickness of all available filters is 0.75 microns. Tuvim further discloses it would be advantageous to have thinner filter because its volume would be smaller".

Applicants respectfully traverse the rejection. Applicants' grounds for traversal are same as those given above in section A.

First, the Examiner has not met initial burden of establishing a basis for denying patentability. Specifically, the Examiner has not provided a reason it would be beneficial to **combine** Tuvim with Brewer.

Second, Tuvim and Brewer are non-analogous art. Tuvim teaches a liquid chromatography (LC) column comprised of fluorocarbon polymer coated screen disks. Brewer teaches a disposable apparatus for solid phase extraction.

Third, there is no teaching, suggestion, or motivation in Tuvim that would have led one of ordinary skill to modify Brewer's apparatus with the thin filters of Tuvim. Tuvim states thin filters are advantageous for LC but does not suggest or motivate use of a thin filter in solid phase extraction. Tuvim does not describe a means for attaching his thin filters to Brewer's apparatus. In fact, Tuvim provides no teaching with respect to solid phase extraction.

Fourth, Brewer discloses that the purpose of the top frit is to prevent the passage of solids or fluids therethrough¹¹. Therefore, a filter such as Tuvim's, which allows fluids to pass through would not be suitable for use in Brewer's apparatus.

Fifth, the Examiner must ascertain the level of a person having ordinary skill in the art, determine what that person would have known at the time of the invention, and what that person would have reasonably expected to have been able to do in view of that knowledge¹². What is the art? There is no reason a person having ordinary skill in the art of solid phase extraction apparatus design would be familiar with LC column and hardware design. Why would an artisan working in solid phase extraction apparatus design read a reference such as Tuvim?

¹¹ Brewer, colum 3, lines 11 – 17.

¹² MPEP 2141 II

June 17, 2008 Reply to non-final rejection dated March 21, 2008

Even if it were desirable to combine Tuvim's filter with Brewer's apparatus, it cannot be assumed that one of ordinary skill would be capable of substituting a filter from an LC column into a solid phase extraction apparatus. Tuvim's filters are coated with fluorocarbon polymer that serves as a gasket when used with an end fitting, a screw and solute conduit. How would a person having ordinary skill in the art attach Tuvim's filters into Brewer's apparatus? Furthermore, as the filter thickness decreases, it becomes more difficult to position and attach each filter to the column. Attaching the bottom and top filter are two different procedures that have different structural and procedural requirements. The bottom filter would have to be attached first and then the column would be filled. After the column is filled, the top filter would have to be attached without flipping or warping. Applicants assert it would be extremely difficult for one of ordinary skill in the art to attach Tuvim's filters to Brewer's disposable apparatus.

Sixth, the Examiner has not considered the Tuvim reference in its entirety. Portions of the Tuvim reference teach away from use in Brewer's apparatus. Tuvim teaches a stamped screen disk filter coated with fluorocarbon polymer on both sides. The fluorocarbon polymer serves as a gasket designed specifically for sealing the filter upon compression in the LC end-fitting assembly¹³. The Examiner has not provided any arguments addressing the advantages of combining Tuvim's polymer-coated filter with the teachings of Brewer. Brewer's apparatus has no end-fitting assembly for receiving Tuvim's polymer-coated filter. Additionally, because of the coating on Tuvim's filter, liquid can pass only through the open center portion of the filter¹⁴. What is the advantage to Brewer's apparatus to use a filter in which liquid can pass only through the center portion? (add brewer's top frit design)

Last, the Examiner states "It would have been obvious to a person of ordinary skill in the art to modify Brewer's frits to have a frit less than 350 microns thick". Applicants argue that such a modification would not yield the claimed invention. Claim 1 recites a **bed** of extraction media. In Applicants' specification, a **bed** of extraction media refers to a **packed bed**¹⁵. Brewer's apparatus does not contain a bed of extraction media. Instead, Brewer teaches a "loosely confined stationary phase" which is essential for mixing with a sample by agitation¹⁶. Additionally, claim 1 recites top and bottom frits that are **bonded** to the column body. Brewer does not disclose frits **bonded** to the column body.

¹³ Tuvim, column 2, lines 7-19

¹⁴ Tuvim, abstract and Figure 1

¹⁵ Applicants' specification, page 9, lines 3 – 7.

¹⁶ Brewer, abstract

June 17, 2008 Reply to non-final rejection dated March 21, 2008

The only reference to frit attachment in Brewer is a pipette tip “fitted” with a frit¹⁷. Therefore, claim 1 is not obvious over the combination of Brewer and Tuvim.

Although Tuvim states that filters having a thickness of 0.75 microns are available, this is not the case. Douglas Gjerde, an inventor of the claimed invention has provided a declaration herewith stating that filters having a thickness of 0.75 microns are not available.

In view of the foregoing, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 103.

C. Hargro in view of Tuvim

In section 9 on page 6 of the Office action, the Examiner rejected claims 1-6, 9-12, 14-15 and 18 - 22 as allegedly unpatentable over Hargro et al. (US 6,139,733, “Hargro”) in view of Tuvim. The Examiner states, “It would have been obvious to a person of ordinary skill in the art to modify Hargro’s frits to have a frit less than 350 microns thick because Tuvim discloses that it is widely known in the art that the smallest thickness of all available filters is 0.75 microns. Tuvim further discloses it would be advantageous to have a thinner filter because its volume would be smaller”.

Applicants respectfully traverse the rejection. First, Applicants assert the Examiner has not made a prima facie case of obviousness. Hargro teaches a chromatography sample module for introducing a sample into a chromatography column. The module can be positioned within a chromatography column¹⁸. The Examiner has not provided a reason it would be beneficial to **combine** Tuvim’s teaching of thin filters with Hargro’s chromatography module.

Second, there is no teaching, suggestion, or motivation in Tuvim, which would have led one of ordinary skill to modify Hargro with the thin filters of Tuvim. Tuvim states thin filters are advantageous because their volume is smaller, but Tuvim does not suggest an advantage for a chromatography module that lies upstream of a chromatography column. Tuvim does not describe a means for attaching his thin filters to Hargro’s chromatography module.

Third, according to section 2141.02 of the MPEP, the Examiner must consider a prior art reference in its entirety including portions that would teach away. Applicants submit the Examiner has not considered the Tuvim reference in its entirety. Applicants further submit portions of the Tuvim reference teach away. Tuvim teaches a **stamped screen disk filter coated with fluorocarbon**

¹⁷ Brewer, column 4, line 1.

¹⁸ Hargro, column 1, lines 47 – 52.

June 17, 2008 Reply to non-final rejection dated March 21, 2008

polymer on both sides. The fluorocarbon polymer serves as a gasket designed specifically for sealing the filter upon compression in the LC end-fitting assembly¹⁹. Hargro's chromatography module has no end-fitting assembly for receiving Tuvim's polymer-coated filter. Additionally, because of the coating on Tuvim's filter, liquid can only pass through the open center portion of the filter²⁰. What is the advantage to Hargro's chromatography module to utilize a filter in which liquid can pass only through the center portion? The restricted opening in Tuvim's filter may hurt the performance of Hargro's chromatography module. The Examiner has not provided any arguments addressing the advantages of combining Tuvim's filter with the teachings of Hargro. The Examiner merely cited text from the BACKGROUND OF THE INVENTION section²¹ wherein Tuvim discloses that the smallest thickness of all available filters is 0.75 microns and that it would be advantageous to have a thinner filter because its volume would be smaller.

Fourth, in making an obviousness rejection, the Examiner must first ascertain the level of a person having ordinary skill in the art. The Examiner must determine what a person having ordinary skill in the art would have known at the time of the invention, and what that person would have reasonably expected to have been able to do in view of that knowledge²². Even if it were desirable to combine Tuvim's filter with Hargro's chromatography module, it cannot be assumed that one of ordinary skill in the art would be capable of substituting Tuvim's filter into Hargro's module. Tuvim's filter is adapted to engage an end fitting, a screw and a solute conduit²³. Hargro's module does not have these components. Furthermore, as the filter thickness decreases, it becomes more difficult to position and attach each filter to the column. Attaching the bottom and top filter are two different procedures that have different structural and procedural requirements. The bottom filter would have to be attached first and then the column would be filled. After the column is filled, the top filter would have to be attached without flipping or warping. Applicants assert it would be extremely difficult for one of ordinary skill in the art to attach Tuvim's filters to Hargro's chromatography module.

Fifth, the combination of Hargro's chromatography module with thin filters would not yield the claimed invention. First, amended claim 1 recites a **pipette tip** column body having a top frit and a bottom frit **bonded** to the column body. Neither Hargro nor Tuvim teach a pipette tip column body having frits bonded thereto.

¹⁹ Tuvim, column 2, lines 7-19

²⁰ Tuvim, abstract and Figure 1

²¹ Tuvim, column 1, lines 38-44

²² MPEP 2141 II

²³ Tuvim, Fig. 2A

June 17, 2008 Reply to non-final rejection dated March 21, 2008

Last, although the Examiner characterized Hargro as teaching an extraction column²⁴, this is not the case. Hargro teaches a chromatography module. The teachings of Hargro and Tuvim both apply to liquid chromatography columns and not solid phase extraction. The combination of Tuvim's chromatography filters with Hargro's chromatography module would not yield a solid phase extraction column.

Therefore, claim 1 is not obvious over the combination of Hargro and Tuvim. Claims 2-6, 9-12, 14, 15, and 18-22 all depend from claim 1, and thus are non-obvious over Hargro and Tuvim.

Although Tuvim states that filters having a thickness of 0.75 microns are available, this is not the case. Douglas Gjerde, an inventor of the claimed invention has provided a declaration herewith stating that filters having a thickness of 0.75 microns are not available.

In view of the foregoing, Applicants respectfully request withdrawal of all the rejections under 35 U.S.C. § 103.

D. Hargro in view of Tuvim and further in view of Smith

In section 10 on page 7 of the Office action, the Examiner rejected Claims 7 and 13 as allegedly unpatentable over Hargro in view of Tuvim, as applied to claims 1 - 6, 9 - 12, 14 - 15 and 18 - 22 above, and further in view of Smith et al. (US Pub. No. 2004/0253687, "Smith"). The Examiner states, "It would have been obvious to a person of ordinary skill in the art to modify the modified Hargro by specifically utilizing sepharose or agarose since the modified Hargro discloses utilizing chromatography medium, which is a term commonly known in the art that pertains to gel-based chromatography media, such as agarose and cellulose. In addition, it would have been obvious to a person of ordinary skill in the art to modify the modified Hargro by specifically utilizing Protein A as the affinity tag because the modified Hargro discloses utilizing a media which is known in the art to contain materials that bind to an affinity tag of choice. Thus, it would be desirable to have protein A as the affinity tag of choice to isolate particular protein complexes bound to the tagged protein of interest."

Applicants respectfully traverse. Since claims 7 and 13 depend from claim 1, the Examiner's rejection is predicated on the assertion that claim 1 is obvious over the combination of Hargro and Tuvim. However, as Applicants argued in section C above, claim 1 is not obvious over the combination of Hargro and Tuvim. The combination of Hargro and Tuvim would not yield the solid phase extraction column of claim 1.

²⁴ Instant Office action, page 6

The addition of Smith does not render claim 1 obvious over Hargro and Tuvim. Smith teaches a method of purifying a plurality of proteins using conventional columns. The combination of Smith, Hargro and Tuvim do not teach a solid phase extraction column having a pipette tip column body and frits bonded to the column body.

The Examiner states that Smith uses a variety chromatography media including agarose, sepharose and a Protein A affinity tag. First, the chromatography media used by Smith is irrelevant because claims 7 and 13 depend from claim 1, and claim 1 is not obvious over Hargro, Tuvim and Smith.

Second, a person having skill in the art of chromatography knows that agarose and sepharose resins must be kept hydrated. Hargro describes a method in which a dissolution solvent is dried by placing the module in a vacuum chamber. Heat may optionally be applied.²⁵ If agarose or sepharose resins were used in Hargro's chromatography module, they would not be kept hydrated. Therefore, Hargro's procedure teaches away from use of agarose and sepharose resins.

In view of the foregoing, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103.

E. Hargro in view of Tuvim and further in view of Hunt

In section 11 on page 9 of the Office action, the Examiner rejected claims 8 and 16 as allegedly unpatentable over Hargro et al. in view of Tuvim as applied to claims 1 - 6, 9 - 12, 14 - 15 and 18 - 22, and further in view of Hunt et al. (US 2002/0110495). The Examiner states, "It would have been obvious to a person of ordinary skill in the art to modify the modified Hargro by specifically having a bed volume less than 20 microliters and an extraction media chamber at most 1000 microliters because it would be advantageous to utilize microscale-sized components for a microscale chromatography column."

Applicants respectfully traverse. In section C above, Applicants argued that claims 1 - 6, 9 - 12, 14 - 15 and 18 - 22 were not obvious over Hargro in view of Tuvim. The Examiner's rejection is predicated on the assertion that claim 1 is obvious over the combination of Hargro and Tuvim. Claim 1 is not obvious over the combination of Hargro and Tuvim because the combination of Hargro and Tuvim would not yield a solid phase extraction column of claim 1 comprised of a pipette tip column body and frits less than 350 microns thick bonded to the column body.

²⁵ Hargro, column 2, lines 48 - 54, claim 1

Hunt discloses a device for the purification and separation of substances²⁶. Hunt does not teach a solid phase extraction column having frits less than 350 microns thick bonded to the column body, so the addition of Hunt does not supply any teaching that renders claims 1 obvious. Since claims 8 and 16 depend from claim 1, claims 8 and 16 are non-obvious over the combination of Hargro and Tuvim. In view of the forgoing, withdrawal of the § 103 rejections is respectfully requested.

F. Hargro et al. and Tuvim in further view of Halmann et al.

In section 15 on page 9 of the Office action, the Examiner rejected claim 17 as allegedly unpatentable over Hargro in view of Tuvim as applied to claims 1-6, 9-12, 14-15 and 18-22 above, and further in view of Halmann et al. (US 4,302,534, "Halmann"). The Examiner writes, "It would have been obvious to a person of ordinary skill in the art to modify the modified Hargro by specifically utilizing less than 10 mg dry weight of Sepharose because it would be beneficial to utilize a limited amount of chromatography media for microscale sized chromatography columns to insure a reasonable amount of chromatography media is packed inside the column".

Applicants respectfully traverse the rejection. In section C above, Applicants argued that claim 1 is not obvious over the combination of Hargro and Tuvim. The addition of Halmann does not supply the missing teaching. Halmann teaches an enzymatic immunoassay, in which chemiluminescence is employed as a detection means. The combination of Hargro, Tuvim and Halmann do not teach the extraction column of claim 1 having a pipette tip column body and frits bonded to the column body. Therefore, claim 1 is not obvious over the combination of Hargro, Tuvim and Halmann. Since claim 17 depends from claim 1, and thus further limits claim 1, claim 17 is not obvious over the combination of Hargro, Tuvim and Halmann. In view of the foregoing, withdrawal of the § 103 rejection is respectfully requested.

²⁶ Hunt, abstract

CONCLUSION

Applicants believe no fee is required for submission of this response, however, if a fee is required, the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account No. 50-2852.

In view of the foregoing, Applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Applicants welcome any opportunity for a telephonic or in-person interview with the Examiner or the Examiner's Supervisor to expedite prosecution of this application. If such an interview can be arranged, the Examiner is invited to telephone the undersigned at (408)267-7214.

Phynexus, Inc.
IP Dept.
3670 Charter Park Drive, Suite A
San Jose, CA 95136

skalman@phynexus.com
(408)267-7214 phone
(408)267-7346 FAX

Respectfully submitted,



Sue S. Kalman
Reg. No. 54,727

Attachments:

- 1) Transmittal Sheet
- 2) Declaration under 37 C.F.R. 1.132